T vs Z

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Take a look at some quantiles of the normal vs the t (at various df), to see how far we have to go to get 97.5% area of the curve

```
# 10 df

qt(0.975,10)
```

```
## [1] 2.228139
```

```
qt(0.975,30)
```

```
## [1] 2.042272
```

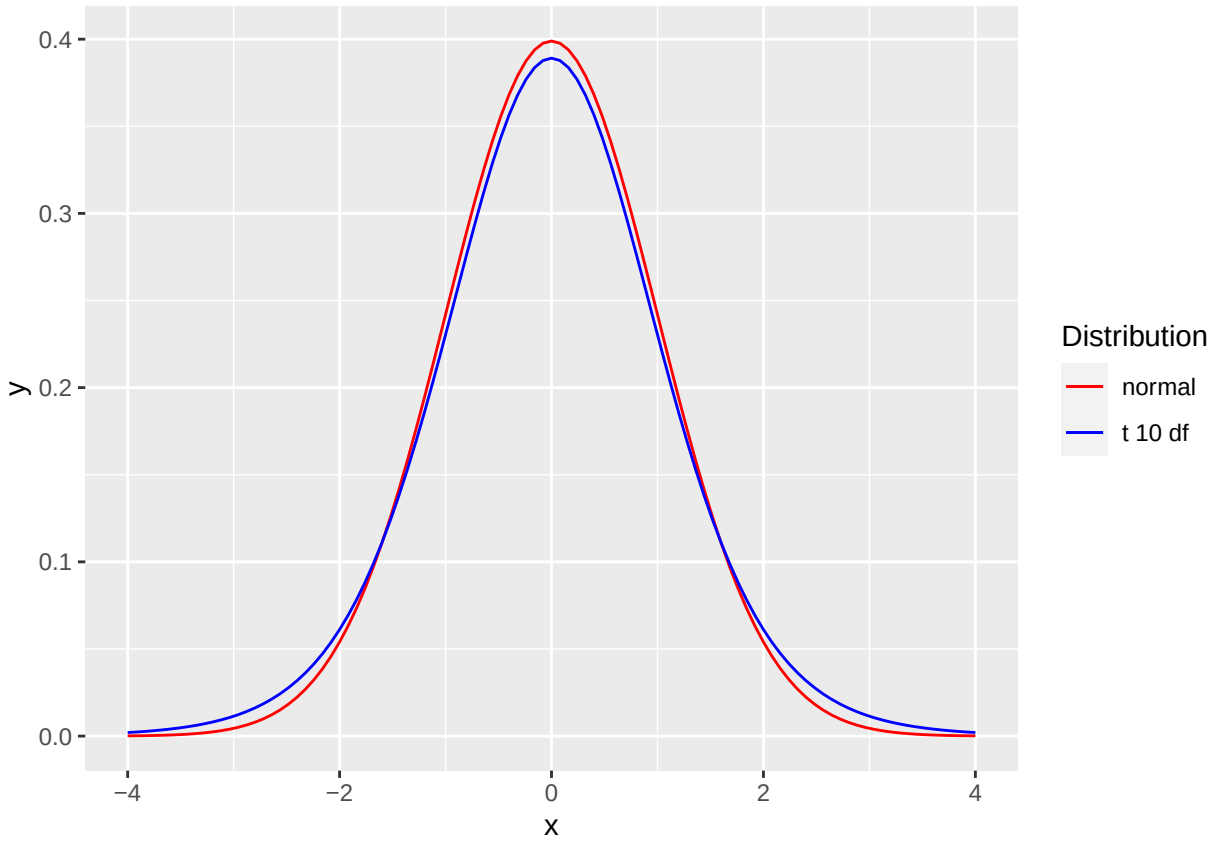
```
# vs

qnorm(0.975)
```

```
## [1] 1.959964
```

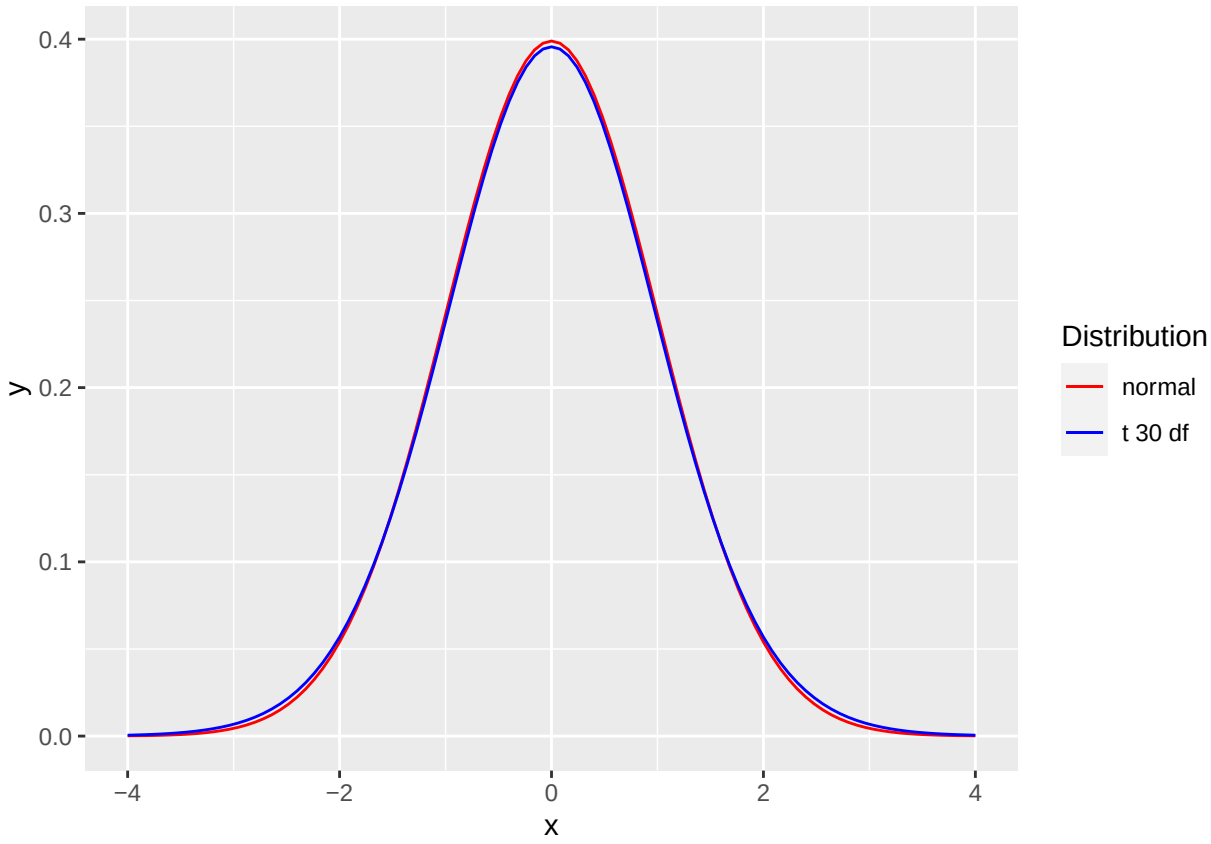
```
# this is why I said 100

qt(0.975,100)
```

```
## [1] 1.983972
```

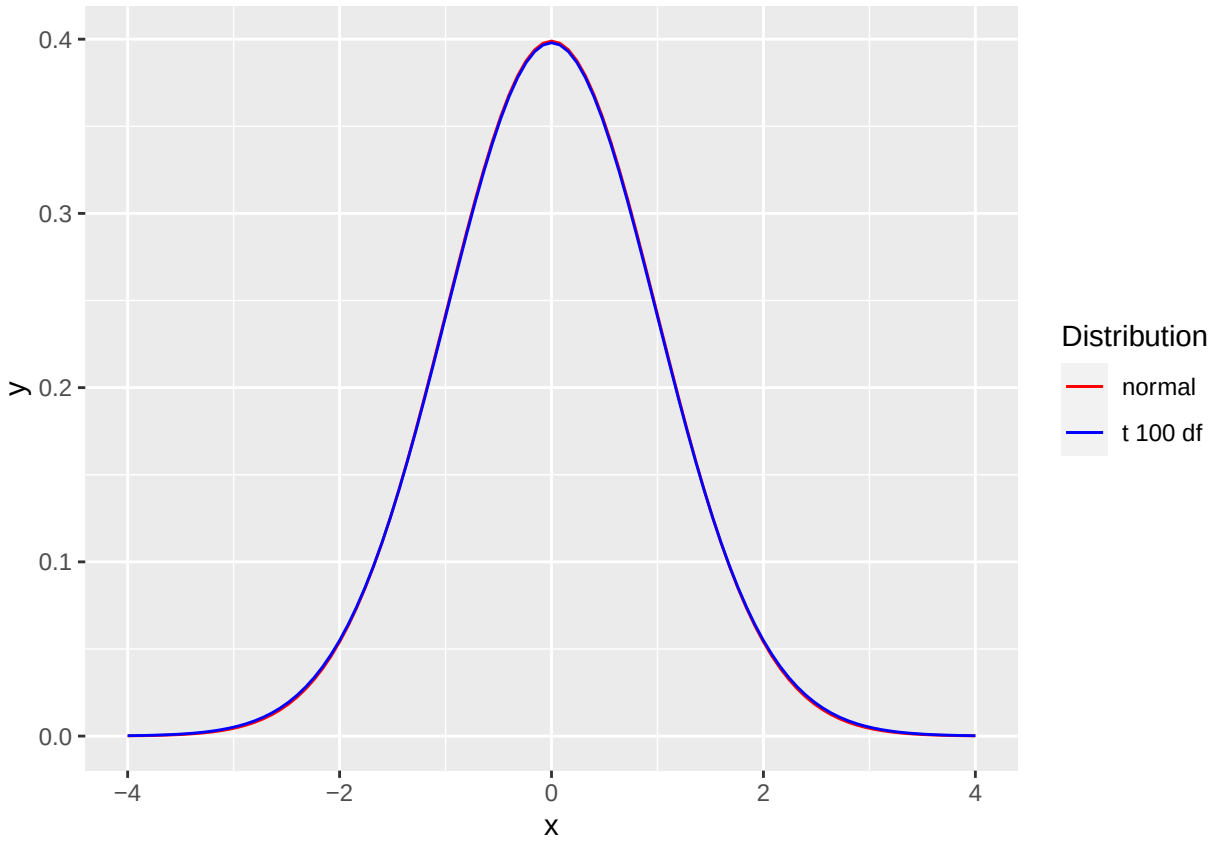
```
library(ggplot2)

p1 <- ggplot(data.frame(x = c(-4, 4)), aes(x = x)) +
  stat_function(fun = dnorm, aes(colour = "normal")) +
  stat_function(fun = dt, args = list(df = 10), aes(colour = "t 10 df")) +
  scale_colour_manual("Distribution", values = c("red", "blue"))

p1
```




```
p2 <- ggplot(data.frame(x = c(-4, 4)), aes(x = x)) +
  stat_function(fun = dnorm, aes(colour = "normal")) +
  stat_function(fun = dt, args = list(df = 30), aes(colour = "t 30 df")) +
  scale_colour_manual("Distribution", values = c("red", "blue"))

p2
```




```
p3 <- ggplot(data.frame(x = c(-4, 4)), aes(x = x)) +
  stat_function(fun = dnorm, aes(colour = "normal")) +
  stat_function(fun = dt,
                args = list(df = 100),
                aes(colour = "t 100 df")) +
  scale_colour_manual("Distribution", values = c("red", "blue"))

p3
```


0.4
0.3
0.2
0.1
0.0
y
−4
−2
0
2
4
x
Distribution
normal
t 100 df